# TECHNICAL REVIEW DOCUMENT for OPERATING PERMIT 080PGA317

to be issued to:

Bargath LLC Riley Compressor Station Garfield County Source ID 0450684

Geoffrey D. Drissel Review Engineer October 2011

## I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the operating permit proposed for this site. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the application submitted June 3, 2008, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division Division files well the website as as on http://www.cdphe.state.co.us/ap/Titlev.html.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised Construction Permit.

# **II. Source Description:**

This source is classified as a natural gas compression facility defined under Standard Industrial Classification 1311. Gas is compressed to specification for transmission to sales pipelines using combustion engines to power compressor units. The facility is located near the city of Parachute in Garfield County, Colorado. The area in which the plant operates is designated as attainment for all federally

regulated pollutants. This source is a true minor with respect to Prevention of Significant Deterioration (PSD) requirements. There are no affected states within 50 miles of the plant. Federal Class I designated areas within 100 kilometers of the plant are the Flattops Wilderness Area; Maroon Bells - Snowmass Wilderness Area; and West Elk Wilderness Area. The facility has indicated that they are not subject to the Accidental Release provisions of section 112(r) of the Clean Air Act. Facility wide emissions are as follows:

<u>Pollutant</u>	Potential to Emit (tpy)	Actual (tpy)
NOx	115.5	92.4
VOC	65.6	42.5
CO	34.0	27.3
HAPs (ind/tot)	6.0/20.0	4.8/6.2

Potential emissions are based on permit limits contained in the current facility wide Construction Permit 04GA0009. Actual emissions are based upon a data provided by the applicant for the year 2010.

This facility is not a major source of HAPs and is not an oil and gas production facility and, consequently, it is not subject to Subpart HHH of the National Emission Standards for Hazardous Air Pollutants.

The engines at this facility are not subject to NSPS Subpart JJJJ since the manufacture date for these engines precedes the applicability date of this subpart.

The facility is, however, subject to the Subpart ZZZZ requirements that apply to spark ignition reciprocating internal combuston engines located at area sources of hazardous air pollutant emissions. The engines at this facility are considered existing engines due to the date they commenced construction and the engines size defines requirements for carbon monoxide outlet emissions or emission reductions. Compliance with the requirements is required no later than October 19, 2013.

Note that some of the emission units are equipped with control devices but none of the units have pre-control emissions that exceed or are equivalent to the major source threshold. Therefore the Compliance Assurance Monitoring (CAM) requirements do not apply to any of the emission units at this facility.

#### III. Emission Sources:

The following sources are specifically regulated under terms and conditions of the operating permit for this site:

<u>Units P001-P006-</u> Caterpillar Model G3516TALE Natural Gas Fired Internal Combustion Engine, 4-Stroke, Lean Burn, Low-Emissions

design, Rated at 1,173 HP Serial Nos. 4EK03957, 4017, 4098, 4230, 4873, and 5008.

#### Discussion:

1. Applicable Requirements- Prior to preparation of the proposed Operating Permit, Colorado Construction Permit 04GA0009 defined applicable requirements for these engines. That permit defines annual limits for each individual engine. Consequently, the Operating Permit will be issued with the Construction Permit terms for each engine as follows:

	Long
<u>Parameter</u>	Term Limit
NOx	19.3 tons/yr
CO	5.7 tons/yr
VOC	5.7 tons/yr
Fuel Use	78.4 MMscf/yr

In addition to the annual NOx, CO, VOC and fuel use limitations, the 20% opacity limit will be incorporated into the Operating Permit.

2. Emission Factors- Emissions from these engine are produced during the combustion process, and are dependent upon the air to fuel ratio adjustment and specific properties of the natural gas being burned. The pollutants of concern are nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOCs). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted when combustion is incomplete. Emissions of NOx, CO and VOC from these engines will be calculated using emission factors listed in the Construction Permit. Since each engine is equipped with a Selective Oxidation Catalyst, control efficiencies of 75% for CO and 50% for VOCs and HAPs are applied. The controlled emission factors are as follows:

<u>Pollutant</u>	Emission Factor	<u>Source</u>
NOx	0.5076 lbs/MMBtu	CP
CO	0.1499 lbs/MMBtu	CP
VOC	0.1499 lbs/MMBtu	CP

**3. Monitoring Plan-** Conditions 1.1 through 1.4 of Section II of the Operating Permit list the monitoring and recordkeeping provisions necessary to verify compliance with applicable requirements for this engine. Specific monitoring guidance for internal combustion engines with control devices has been developed by the Division that defines portable monitoring for NOx and CO as minimum requirements for these engines. Consequently, the source will be required to perform quarterly portable

monitoring to verify both the emission rate and the emission factors for NOx and CO. Simultaneous verification of the CO emission rate and emission factor will be required because of the correlation between NOx and CO emissions.

Emissions of NOx, CO and VOC will be calculated monthly using actual fuel use and the fuel based emission factors. A rolling 12 month emission total will be calculated to determine compliance with the annual emission limits.

The Division has determined that emission calculations for both compliance and APEN reporting purposes will be based on the fuel based emission factors listed above and actual annual fuel use. The applicant will be required to conduct the emission calculation annually and submit a revised APEN to the Division if emissions increase by the levels described in Colorado Regulation No. 3, Part A, Section II.C.2, compared to the latest APEN on file with the Division.

Compliance with the opacity standard of 20% will be presumed in the absence of credible evidence to the contrary that the engine has used pipeline-quality natural gas exclusively during the reporting period. The Division has determined, based on AP-42 emission factors and engineering judgement, that particulate emissions from this engine will be insignificant if the listed condition is met.

**4. Compliance Status-** The applicant certified in the operating permit application that these engines were in compliance with all applicable requirements at the time of submittal. Lacking any evidence to the contrary, this source is considered to be in compliance with all applicable requirements.

# <u>Units T007-T008</u>-Condensate Storage Tanks

### Discussion:

- 1. Applicable Requirements Prior to preparation of the proposed Operating Permit, Colorado Construction Permit 04GA0009 Modification 5, Initial Approval, defined applicable requirements for these units. Permit 04GA0009 established a combined condensate throughput limit of 306,600 gallons per year and an annual combined VOC emission limit of 20.7 tons. The draft Operating Permit will incorporate these annual throughput and VOC emission limits.
- **2. Emission Factors -** Emissions from condensate storage tanks are

typically predicted using the E&P TANK Version 2.0 or higher model. Emissions of VOCs and associated HAPs result from flash events and working and breathing losses from the storage tanks and are dependent on condensate throughput and process operating parameters that are input into this model. These parameters include operating temperatures and pressures, condensate characteristics, and a breakdown of the constituents in the pressurized condensate.

- 3. Monitoring Plan Conditions 2.1 through 2.3 of Section II of the Operating Permit list the monitoring and recordkeeping provisions necessary to verify compliance with the applicable requirements. Williams will use the E&P TANK Version 2.0 or higher model to predict annual emissions of VOC and HAPs from the storage tanks in order to determine compliance with the VOC emission limit and the facility HAPs limits. Monthly emissions estimation will be conducted to maintain a rolling 12 month total of emissions. In addition, condensate throughput will be monitored to maintain a rolling 12 month total to demonstrate compliance with the annual throughput limitation.
- **4. Compliance Status -** This source of emissions was included in the original Operating Permit application as part of a facility emissions total. The applicant certified in the operating permit application that the facility was in compliance with all applicable requirements at the time of submittal. Lacking any evidence to the contrary, this source is considered to be in compliance with all applicable requirements.

# Unit F009- Fugitive VOC Emissions

#### Discussion:

- 1. Applicable Requirements Prior to the Title V application submittal, Colorado Construction Permit 04GA0009 defined applicable requirements for this source; which set limitations on annual VOC emissions. The annual emission limitation of 4.9 tons per year has been incorporated into the draft Operating Permit as an applicable requirement and a method for estimating emissions based on the type and number of piping components is described.
- **2. Emission Factors -** Emissions from this source consist of VOC leaks from equipment and associated piping and components at the facility. Emissions from leaking equipment and piping are estimated using system component counts and EPA emission factors as described in the 1995 EPA document "Protocol for Equipment Leak Emission Estimates".
- **3. Monitoring Plan -** Conditions 3.1 through 3.2 of Section II of the

Operating Permit list the monitoring and recordkeeping provisions necessary to verify compliance with the applicable requirements. Specifically, the applicant must maintain an annual accounting of the number of all equipment components, by tracking all component additions and deletions, that could contribute to fugitive VOC leaks. The resulting leak calculation will be compared to the annual VOC limit to determine compliance. No specific component limit has been specified in the Operating Permit to allow flexibility under the VOC emission limitation.

## 4. Compliance Status -

This source of emissions was included in the original Operating Permit application as part of a facility emissions total. The applicant certified in the operating permit application that the facility was in compliance with all applicable requirements at the time of submittal. Lacking any evidence to the contrary, this source is considered to be in compliance with all applicable requirements.

# **Unit P011**- Maintenance Engine Blowdowns

#### Discussion:

- 1. Applicable Requirements Prior to the Title V application submittal, Colorado Construction Permit 04GA0009 defined applicable requirements for this source; which set limitations on annual VOC emissions and on the amount of gas that may be vented annually. The annual VOC emission limitation of 2.9 tons per year and the annual vented volume limitation of 1.62 MMscf have been incorporated into the draft Operating Permit as applicable requirements. A method for estimating emissions and vented gas volumes based on the number of engine blowdowns is described.
- **2. Emission Factors -** Emissions from this source are produced from the venting of natural gas during a maintenance blowdown of a compressor engine. The facility has indicated that during an engine blowdown they release approximately 7,500 scf of natural gas. The amount of VOC released during a blowdown event is estimated using that blowdown volume and a gas speciation analysis.
- **3. Monitoring Plan -** Conditions 5.1 to 5.3 of the operating permit list the monitoring and recordkeeping provisions necessary to verify compliance with the applicable requirements. Specifically, the facility will need to record the number of engine blowdowns that occur each month. A gas analysis that shows the speciation of the natural gas must be performed semi-annually and the results used to determine the type and quantity of pollutants released.

**4. Compliance Status -** This source of emissions was included in the original Operating Permit application as part of a facility emissions total. The applicant certified in the operating permit application that the facility was in compliance with all applicable requirements at the time of submittal. Lacking any evidence to the contrary, this source is considered to be in compliance with all applicable requirements

# IV. Insignificant Activities

Several insignificant activities were listed by the applicant in an introductory letter submitted with the operating permit application. These activities consist of lube oil, glycol, antifreeze and used oil storage tanks, and the condensate loadout activities.

# V. Alternative Operating Scenarios

The applicant did not request any alternative operating scenarios for this facility. However, because an AOS was included in the facility Construction Permit, an alternative operating scenario has been incorporated that provides for temporary or permanent replacement of compressor engines as a result of breakdown or periodic maintenance.

#### VI. Permit Shield

The regulation citations identified as not applicable to this source in Section III of the Operating Permit are based on a condensed version of the requested Permit Shield citations as submitted with the original application for this facility. The original list contained many citations that were clearly unnecessary for the shield. For example, the original application stated that incinerator regulations would not apply since this facility does not operate incinerators. It is the Division's opinion that the Shield should be reserved for regulations that might reasonably otherwise apply to equipment at the facility in question. Therefore, the review engineer decided that many of the requested shield items were unnecessary and so included only certain ones.

## VII. Accidental Release Program - 112(r)

A provision under Part 70 of the Clean Air Act (amended) is the Accidental Release provisions of section 112(r). Under this program, EPA established a list of substances which pose the greatest risk of death or serious injury to humans or extreme harm to the environment. Additionally, a list of flammable substances and high explosives were set forth. Each substance was given a threshold or de minimis

level by considering their individual toxicity, reactivity, volatility, flammability, explosiveness, and dispersiveness. Facilities using any of these substances in greater-than-threshold quantities are required to prepare and implement a Risk Management/Prevention Plan for those substances.

Bargath, in the Operating Permit application, indicated that this facility is not subject to section 112(r).